

Applicants : John P. Kane and Karl D. Sachs
Original Patent No. : 6,502,618
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The listing of the claims is in addition to the claims 1-30 of the original issued patent, U.S. Patent No. 6,502,618:

LISTING OF CLAIMS:

Claims 1-30 are identical to the claims of the issued patent, U.S. Patent No. 6,502,618. No amendments are made to claims 1-30.

Please add claims 31-54 as follows:

31. (New) A tire filling station adapted to fill air into a wheel-tire combination including a tire mounted on a wheel rim, said tire filling station comprising:

a support and seal arrangement including a support and seal surface adapted to support and seal against a first side surface of the wheel-tire combination, wherein said support and seal arrangement is a multi-part seal arrangement comprising at least first and second plate members, which are selectively relatively movable apart from one another with a first gap therebetween in a separated state, and which are selectively relatively movable together to sealingly contact one another in a contacting state and thereby form said support and seal surface as an uninterrupted sealed surface;

a tire filling bell arranged opposite and facing said support and seal surface so as to receive the wheel-tire combination in a filling position between said tire filling bell and said support and seal surface, wherein said tire filling bell is adapted to press and seal against a second side surface of the tire opposite the first side surface;

a transport apparatus adapted to support and transport the wheel-tire combination along a transport plane selectively to and away from the filling position; and

a lifting device that supports and is adapted to selectively lift at least one of said first plate member and said transport apparatus relative to each other in a lifting direction that has at least a direction component perpendicular to said transport plane.

32. (New) The tire filling station according to claim 31, wherein:

said tire filling bell and said support and seal arrangement are both arranged coaxially along a common center axis;

the wheel-tire combination is adapted to be positioned in the filling position so that a wheel axis thereof is aligned with said common center axis;

said transport apparatus comprises two transport conveyor devices that are arranged spaced apart from one another on opposite sides of said common center axis and that are adapted to selectively support and transport the wheel-tire combination thereon;

said first plate member is a central plate member arranged centrally on said common center axis between said two transport conveyor devices; and

said second plate member is arranged to be positioned in a lateral position next to said central plate member and to laterally sealingly contact said central plate member in said contacting state.

33. (New) The tire filling station according to claim 32, wherein said second plate member is selectively movable between said lateral position in said contacting state and a retracted position between said two transport conveyor devices in said separated state.

34. (New) The tire filling station according to claim 32, wherein said multi-part seal arrangement further comprises a third plate member arranged laterally next to and sealingly contacting said central plate member on a side thereof opposite said second plate member in said contacting state.

35. (New) The tire filling station according to claim 34, wherein said second and third plate members are each laterally slidable relative to said central plate member between respective positions in said separated state and said contacting state.

36. (New) The tire filling station according to claim 35, wherein said first gap between said second plate member and said central plate member in said separated state provides a space that accommodates a first one of said two transport conveyor devices therein, wherein a second gap is formed between said third plate member and said central plate member in said

separated state, and wherein said second gap provides a space that accommodates a second one of said two transport conveyor devices therein.

37. (New) The tire filling station according to claim 31, wherein said lifting device supports and is adapted to selectively lift said transport apparatus relative to said first plate member.

38. (New) The tire filling station according to claim 31, wherein said lifting device supports and is adapted to selectively lift said first plate member relative to said transport apparatus.

39. (New) The tire filling station according to claim 31, wherein said multi-part seal arrangement farther comprises seal members arranged along respective opposite adjoining contact edges of said plate members.

40. (New) The tire filling station according to claim 31, wherein said tire filling bell comprises at least first and second tire filling rings that respectively have different diameters.

41. (New) The tire filling station according to claim 40, wherein said first and second tire filling rings are respectively inner and outer rings arranged coaxially and axially slidable relative to each other.

42. (New) A method of using the tire filling station according to claim 31 for filling air into the wheel-tire combination, comprising the following steps:

a) transporting said wheel-tire combination on said transport apparatus into said filling position;

b) in said filling position, supporting said wheel-tire combination on said first plate member, and operating said lifting device to move said first plate member and said transport apparatus relatively away from each other in a direction having at least a direction component perpendicular to said transport plane;

c) after said step b), moving said at least first and second plate members from said separated state to said contacting state to thereby form from said plate members said support and seal surface as said uninterrupted sealed surface;

d) supporting and sealing said first side surface of said wheel-tire combination on said uninterrupted sealed surface;

e) moving at least one of said tire filling bell and said support and seal surface relative to each other so as to press said tire filling bell and said second side surface of said tire against each other and open an annular gap between said tire and said wheel rim;

f) filling air into said tire through said annular gap;

g) after completion of said step f), moving said plate members apart from one another from said contacting state into said separated state, and then operating said lifting device opposite said step b) so as to bring said transport apparatus into contact with said wheel-tire combination; and

h) after said step g), supporting said wheel-tire combination on said transport apparatus and transporting said wheel-tire combination on said transport apparatus away from said filling position.

43. (New) The method according to claim 42, wherein said operating of said lifting device in said steps b) and g) comprises moving said transport apparatus down and up relative to a fixed machine frame of said station and relative to a fixed plane on which said plate members are arranged.

44. (New) The method according to claim 42, wherein said operating of said lifting device in said steps b) and g) comprises moving said first plate member up and down relative to a fixed machine frame of said station and relative to a fixed plane on which said transport apparatus is arranged.

45. (New) The method according to claim 42, wherein said tire filling bell comprises at least first and second tire filling rings that respectively have different diameters, and wherein said step e) comprises selecting one of said first and second tire filling rings dependent on a diameter of said wheel-tire combination, and moving and pressing said selected one of said tire filling rings against said second side surface of said tire.

46. (New) A tire mounting or wheel balancing system comprising said tire filling station according to claim 31, and at least one further measuring or processing station arranged adjacent to said transport apparatus.

47. (New) A tire filling station adapted to fill air into a wheel-tire combination including a tire mounted on a wheel rim, said tire filling station comprising:

- a pressurized air supply line adapted to supply pressurized air;
- a support and seal arrangement including a support and seal surface adapted to support and seal against a first side surface of the wheel-tire combination; and
- a tire filling bell arranged opposite and facing said support and seal surface so as to receive the wheel-tire combination in a filling position between said tire filling bell and said support and seal surface;

- wherein said tire filling bell comprises a first inner bell including a first tire filling ring and a first bell end that closes one circular end of said first tire filling ring to define an inner bell chamber inside said first tire filling ring, and a second outer bell including a second tire filling ring and a second bell end that closes one circular end of said second tire filling ring;

- wherein said first tire filling ring has a smaller diameter than said second tire filling ring, and said first and second tire filling rings are arranged coaxial and axially slidable relative to each other along a central axis;

- wherein said first and second tire filling rings are each selectively movable relatively toward said support and seal surface to selectively press and seal against a second side surface of the tire opposite the first side surface; and

- wherein said pressurized air supply line is connected to said first inner bell and said inner bell chamber is enclosed relative to an outer space outside of said first inner bell and inside of said second outer bell when said first tire filling ring is sealed against the second side surface of the tire, so that the pressurized air supplied from said pressurized air supply line enters directly into said inner bell chamber without entering said outer space when said first tire filling ring is sealed against the second side surface of the tire.

48. (New) The tire filling station according to claim 47, further comprising an actuator device connected to said first bell end and to said second bell end coaxially along said central axis and adapted to selectively move said first inner bell and said second outer bell relative to one another along said central axis, and wherein said pressurized air supply line communicates through a hole in said first bell end into said inner bell chamber.

49. (New) The tire filling station according to claim 47, expressly excluding the use of a separate seal ring between said tire filling bell and the tire.

50. (New) A method of using the tire filling station according to claim 47 for filling air into the wheel-tire combination, comprising the following steps:

a) placing said wheel-tire combination into said filling position, and supporting said first side surface thereof on said support and seal surface;

b) selecting a respective one of said tire filling rings that has a diameter larger than an outer diameter of said wheel rim and within a diameter range of a sidewall of said tire, and moving said selected one of said tire filling rings toward said support and seal surface to press against said second side surface of said tire and open an annular gap between said tire and said wheel rim;

c) filling pressurized air from said pressurized air supply line through said tire filling bell into said tire through said gap; and

d) moving said selected one of said tire filling rings away from said support and seal surface to move out of contact with said second side surface of said tire.

51. (New) A combination comprising said tire filling station according to claim 47, at least one further measuring or processing station, and a transport apparatus linking said stations to one another so as to form thereof a tire mounting or wheel balancing system.

52. (New) An apparatus for inflating a tire mounted on a rim comprising:

a reciprocal inflation head movable from a first position spaced from the tire to a second position engagable with a side wall of the tire for communicating pressurized fluid to inflate the tire on the rim, the head having at least two concentric seals selectively moveable

with respect to one another to independently bring each one of the at least two concentric seals selectively into sealing engagement with a side wall of the tire depending on the size of the tire to be inflated on the rim; and

a reciprocation assembly coupled with at least one of said seals comprising a selectively elongatable member adapted to move at least one seal with respect to the other seal for selectively presenting an appropriate one of the at least two concentric seals in operable position for engaging a side wall of the tire to be inflated depending on the size of the tire to be inflated on the rim.

53. (New) An apparatus for inflating a tire mounted on a rim comprising:

a reciprocal inflation head moveable from a first position spaced from the tire to a second position engagable with a side wall of the tire for communicating pressurized fluid to inflate the tire on the rim, the head having at least two concentric seals selectively moveable with respect to one another to bring an appropriate one of the at least two concentric seals selectively into sealing engagement with a side wall of the tire depending on the size of the tire to be inflated on the rim, wherein the inflation head includes a first circular wall extending outwardly from the inflation head and supporting a first seal corresponding to one of the at least two concentric seals for operable engagement with the side wall of the tire to be inflated, and a second circular wall reciprocally mounted with respect to the inflation head for movement between an extended position and a retracted position, and supporting a second seal corresponding to another of the at least two concentric seals for operable engagement with the side wall of the tire to be inflated, the first seal positioned for operable engagement with a first size tire when the second circular wall is in the retracted position, and the second seal position for operable engagement with a second size tire when the second circular wall is in the extended position; and

a reciprocation assembly coupled with at least one of said seals comprising a selectively elongatable member adapted to move at least one seal with respect to the other seal for selectively presenting one of the at least two concentric seals in operable positions for engaging a side wall of the tire to be inflated depending on the size of the tire to be inflated on the rim.

54. (New) An apparatus for inflating a tire mounted on a rim comprising:

a reciprocal inflation head moveable from a first position spaced from the tire to a second position engagable with a side wall of the tire for communicating pressurized fluid to inflate the tire on the rim, the head having at least two concentric seals selectively moveable with respect to one another to bring an appropriate one of the at least two concentric seals selectively into sealing engagement with a side wall of the tire depending on the size of the tire to be inflated on the rim;

a reciprocation assembly coupled with at least one of said seals comprising a selectively elongatable member adapted to move at least one seal with respect to the other seal for selectively presenting one of the at least two concentric seals in operable position for engaging a side wall of the tire to be inflated depending on the size of the tire to be inflated on the rim;

a tire transport conveyor adapted to transport a tire mounted on a rim to a predetermined position at a tire inflating workstation, said tire transport conveyor having carrier surfaces spaced laterally with respect to one another along a path of travel for engaging the tire and rim for transport, the carrier surfaces moveable along the path of travel and moveable vertically between a raised transport position and a lowered transfer position; and

a support surface at the tire inflating workstation, the support surface having at least two portions, the portions having at least one interlocking joint for holding the portions of the support surface in sealing engagement with respect to one another during an inflation process, at least one portion of the support surface moveable transversely with respect to the path of travel of the conveyor for allowing transfer of the tire and rim transported by the conveyor to the support surface as the conveyor moves between the raised transport position and the lowered transport position.